

Billings (J. S.)

Address of Dr. John S. Billings.

CELEBRATION

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AMERICAN INVENTIONS AND DISCOVERIES IN MEDICINE, SURGERY AND PRACTICAL SANITA- TION.

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In connection with this celebration of a century's work of the American Patent System, I have been requested by the Advisory Committee to prepare a brief paper upon inventions and discoveries in medicine, surgery and practical sanitation, with special reference to the progress that has been made in this country in these branches of science and art.

It would be impossible to present on this occasion such a summary as would be of any special interest or use, of the progress which has been made in medicine and sanitation during the century, either by the world at large or by American physicians and sanitarians in particular; and I shall therefore confine my remarks mainly to the progress which has been made in these branches in connection with mechanical inventions and new chemical combinations devised by American inventors—which will require much less time.

The application of the patent system to medicine in this country has had its advantages for certain people, has given employment to a considerable amount of capital in production (and to a much larger amount in advertising), has contributed materially to the revenues of the government, and has made a great deal of work for the medical profession.

So far as I know, but one complete system of medicine has been patented in this country, and that was the steam, Cayenne pepper and lobelia system—commonly known as Thomsonianism—to which a patent was granted in 1836. The right to practice this system, with a book describing the methods, was sold by the patentee for twenty dollars, and perhaps some of you may have some reminiscences of it connected with your

boyish days. I am certain I shall never forget the effects of "Composition Powder," or of "Number Six," which was essentially a concentrated tincture of Cayenne pepper, and one dose of which was enough to make a boy willing to go to school for a month.

From a report made by the Commissioner of Patents in 1849, it appears that eighty-six patents for medicines had been granted up to that date ; but the specifications of most of those issued before 1836 had been lost by fire. The greater number of patents for medicines were issued between 1850 and 1860. The total number of patents granted for medicines during the last decade (1880-1890) is 540.¹

This, however, applies only to "patent medicines," properly so-called, the claims for which are, for the most part, presented by simple-minded men who know very little of the ways of the world. A patent requires a full and unreserved disclosure of the recipe, and the mode of compounding the same, for the public benefit when the term of the patent shall have expired ; and the Commissioner of Patents may, if he chooses, require the applicant to furnish specimens of the composition and of its ingredients, sufficient in quantity for the purpose of experiment. The law, however, does not require the applicant to furnish patients to be experimented on, and this may be the reason why the Commissioner has never demanded samples of the ingredients. By far the greater number of the owners of panaceas and nostrums are too shrewd to thus publish their secrets, for they can attain their purpose much better under the law for registering trade-marks and labels, designs for bottles and packages, and copyrights of printed matter, which are less costly, and do not reveal the arcanum.

These proprietary medicines constitute the great bulk of what the public call "patent medicines."

The trade in patent and secret remedies has been, and still is, an important one. We are a bitters-and-pill-taking people ; in the fried pork and salæratus biscuit regions the demand for such medicines is unfailing, but everywhere they are found. I

¹ For these figures, and other data used in this paper I am indebted to my friend Mr. H. H. Bates, Chief Examiner in the Patent Office.

suppose the chief consumption of them is by women and children—with a fair allowance of clergymen, if we may judge from the printed testimonials. I sampled a good many of them myself when I was a boy. Of course, these remarks do not apply to bitters. One of the latest patents is for a device to wash pills rapidly down the throat.

According to the Census of 1880 there were in the United States 592 establishments devoted to the manufacture of drugs and chemicals, the capital invested being \$28,598,458, and the annual value of the product \$38,173,658, while there were 563 establishments devoted to the manufacture of patent medicines and compounds, the capital invested being \$10,620,880, and the value of the product \$14,682,494.²

A patent automatic doctor, on the principle of "put a quarter in the slot and take out the pill which suits your case," has been proposed, but this patent is said to be of Dutch and not of American origin. The idea of this may have come from Japan, for an old medicine case from that country which I possess, has four compartments filled with pills, and the label says that those in the first compartment are good for all diseases of the head, those in the second for all diseases of the body, those in the third for all diseases of the limbs, and those in the fourth are a sure vermifuge.

From the commercial and industrial point of view the great importance of patent and proprietary medicines is connected with advertising. The problem is to induce people to pay twenty-five cents for the liver-encouraging, silent-perambulating, family pills, which cost three cents. Some day I hope that the modern professional expert in advertising will favor us with his views as to the nature and character of those people who were induced to buy Jones's liver pills or Slow's specific by means of a huge display of these names on the sides and roofs of barns and outbuildings, which display forms such a prominent feature in many of our American landscapes, as seen by the traveler on the railway. I suppose there must be such people, for I have a high estimate of the business shrewdness of the men who pay for these abominations. I should also like

² See the *Lancet*, October 5, 1889, p. 683.

to know how much a farmer gets for allowing his buildings to be thus defaced. He must be hard-up; indeed such a display indicates that the place is probably mortgaged and that the poor man is heavily in debt.

Even the soap advertisers are not as guilty as the nostrum-makers in this particular style of nuisance, although they far exceed the latter in viciousness when it comes to applying art to ignoble purposes. The connection between progress in medicine and soap advertisements may not be clear to you, but it exists nevertheless, for many of these soaps make work for the doctors by producing skin troubles.

Upon the whole, I should think that the number of people who would take some trouble to avoid purchasing an article which is thus advertised must be rapidly increasing, so that such displays will soon be no longer profitable. The great importance of advertising does not relate to the placard or chromo business, but to its relations to periodical literature—to the daily and weekly press and the monthly magazines and journals.

To the establishment and support of some of our newspapers and journals, medical as well as others, these proprietary and secret medicines, cosmetics, food preparations, etc., have no doubt contributed largely.

I am sorry to say that I have been unable to obtain definite information as to the direct benefits which inventions of this kind have conferred on the public in the way of the cure of disease or preventing death. Among the questions which were not put in the schedules of the last census were the following, namely: Did you ever take any patent or proprietary medicine? If so, what and how much, and what was the result? Some very remarkable statistics would no doubt have been obtained had this inquiry been made. I can only say that I know of but four secret remedies which have been really valuable additions to the resources of practical medicine, and the composition of all these is now known. These four are all powerful and dangerous, and should only be used on the advice of a skilled physician. Most of such remedies have little value as curative agents, and some of them are prepared

and purchased almost exclusively for immoral or criminal purposes.

In France the sale of secret and patent medicines is not allowed unless they have been examined and approved by the National Academy of Medicine, and the same general rule holds good in Italy and Spain.

The Japanese have followed the French method, and their experience is interesting. The Central Sanitary Bureau established a public laboratory for the analysis of chemicals as a medicine. The proprietors of each of such medicines were bound to present samples, and the names and proportions of the ingredients, directions for its use and explanations of its supposed efficacy. According to a report in the *British Medical Journal*, during the first year there were 11,904 applicants for license to prepare and sell 148,091 patent and secret medicines. Permission for the preparation and sale of 58,638 different kinds were granted, 8,592 were prohibited, 9,918 were ordered to be discountenanced, and 70,943 remained to be reported on. The great majority of those which were authorized were of no efficacy, but few being remedial agents; but their sale was not prohibited, as they were not found to be dangerous to the health of the people.³ I do not vouch for these figures, which throw our records entirely in the shade.

In 1849 a special committee of the House of Representatives reported to the House a bill to prevent the patenting of medicines, accompanied by a report. This bill provided that after the passage of the act letters-patent shall not be granted for any article whatever as a medicine, provided that this shall not apply to machines, instruments or apparatus. When the matter came before the House for consideration the bill was laid on the table.⁴

You are all aware that the great majority of the medical profession consider it to be improper and discreditable for a physician to patent a remedy. The Medical Code of Ethics declares that it is derogatory to professional character "for a physician to hold a patent for any surgical instrument or medi-

³ *British Medical Journal*, July 3, 1880, vol. ii, p. 24.

⁴ *Congressional Globe*, March 3, 1849, p. 697.

cine ; or to dispense a secret nostrum whether it be the composition or exclusive property of himself or others. For if such nostrum be of real efficacy, any concealment regarding it is inconsistent with beneficence and professional liberality ; and if mystery alone give it value and importance, such craft implies either disgraceful ignorance or fraudulent avarice. It is also reprehensible for physicians to give certificates attesting the efficacy of patent or secret medicines, or in any way to promote the use of them." Like all legislation, this is a formal declaration of the customs of the profession, which customs are of great antiquity. The principle upon which it is founded is thus expressed by Lord Bacon : "I hold every man a debtor to his profession ; from the which, as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto."

The rule, however, is not always adhered to by physicians, the most notable exception having been, perhaps, the use of Koch's lymph before its composition was revealed. As regards the patenting of surgical instruments and apparatus, the opinion of the great majority of physicians is in accordance with the rule just stated, but there are some who question its propriety, although they obey it—and there are few who would not use a patented instrument in a case to which they thought it was applicable.

The total number of surgical instruments and appliances patented during the past decade has been about 1,200, the patents having been in almost all cases taken out by manufacturers. With these may be classed dentists' tools and apparatus, of which about 500 have been patented during the last ten years, and in this field of invention the United States leads the world. The same may be said with regard to artificial limbs, of which our great war gave rise to many varieties.

As you know, the law prescribes that a patent may be given for a "new and useful art, machine, manufacture or composition of matter." I used to think that the word "useful" in this law had its ordinary meaning, and, therefore, wondered exceedingly as to why the Patent Office examiners allowed patents to certain things which came under my notice. One

day, however, I received an article from the Patent Office, with the request for a report as to whether it was useful in the sense in which that word was used by the Office, namely, "not pernicious or prejudicial to public interests—capable of being used"—and then for the first time I understood one of the first principles of the patent law of the United States, that is, that it does not take into consideration the degree of utility in the device, or, in other words, that "useful" means "harmless."

If a patent is granted to a medicine, it must be as a composition of matter as a special article of manufacture. The practice of the Patent Office in these matters is not generally understood. It does not now consider that medical prescriptions are inventions within the meaning of the law, or that a mere aggregation of well-known remedies to obtain a cumulative effect is a patentable composition of matter. A certain number of claims for Government protection in the form of patents or trade-marks are made for medical compounds or for apparatus, under false pretences; that is to say, the claim is for a new remedy for rheumatism or dyspepsia or displacement, with a warning against their use under certain conditions, the real design being that they are to be used under precisely these conditions in order to procure abortion, etc. These are sometimes difficult cases for the Patent Office to treat properly, for the law does not allow a large discretion for refusal on mere suspicion, and where there is ostensible and possible utility (in the Patent Office sense) it can hardly reject the claim on the ground that the invention *might* be used for immoral purposes.

I said in the beginning that I cannot on this occasion give any sufficient account of the progress of invention and discovery in medicine and sanitation during the century just gone. The great step forward which has been made, has been the establishment of a true scientific foundation for the art upon the discoveries made in physics, chemistry, and biology. One hundred years ago the practice of medicine, and measures to preserve health, so far as these were really efficacious, were in the main empirical—that is, certain effects were known to usually follow the giving of certain drugs, or the application of certain measures, but why or how these effects were produced was un-

known. They sailed then by dead-reckoning, in several senses of this phrase.

Since then not only have great advances been made by a continuance of these empirical measures in treatment, but we have learned much as to the mechanism and functions of different parts of the body, and as to the nature of the causes of some of the most prevalent and fatal forms of disease ; and, as a consequence, can apply means of prevention or treatment in a much more direct and definite way than was formerly the case. For example, a hundred years ago nothing was known of the difference between typhus and typhoid fevers. We have now discovered that the first is a disease propagated largely by aerial contagion and induced or aggravated by over-crowding, the preventive means being isolation, light and fresh air ; while the second is due to a minute vegetable organism, a bacillus, and is propagated mainly by contaminated water, milk, food and clothing ; and that the treatment of the two diseases should be very different.

The most important improvements in practical medicine made in the United States have been chiefly in surgery, in its various branches. We have led the way in the ligation of some of the larger arteries, in the removal of abdominal tumors, in the treatment of diseases and injuries peculiar to women, in the treatment of spinal affections and of deformities of various kinds. Above all, we were the first to show the uses of anæsthetics—the most important advance in medicine made during the century. In our late war we taught Europe how to build, organize and manage military hospitals ; and we formed the best museum in existence illustrating modern military medicine and surgery. Our contributions to medical literature have been many and valuable ; and our government possesses the largest and best working medical library in the world. We have more doctors and more medical schools, in proportion to the population, than any other country, and while this is not good evidence of progress, I am glad to be able to say that the standard of acquirements in medical education has been, and is now rising, and our leading medical schools are now being equipped with buildings, with apparatus, with laboratories,

and most important of all, with brains, which enable them to give means of practical instruction equal to any to be found elsewhere.

As regards preventive public medicine and sanitation, we have not made so many valuable contributions to the world's stock of knowledge—chiefly because, until quite recently, we have not had the stimulus to persistent effort which comes from density of population and its complicated relation to sewage disposal and water supplies; nor have we had the information relative to localized causes of disease and death, which is the essential foundation of public hygiene, and which can only be obtained by a proper system of vital statistics. We can, however, show enough and to spare of inventions in the way of sanitary appliances, fixtures and systems for house drainage, sewerage, etc.; for the ingenuity of inventors has kept pace with the increasing demands for protection from the effects of the decomposition of waste matters, as increase of knowledge has made these known to us. The total number of patents granted for sanitary appliances during the last decade (1880-1890) is about 1,175. If good fixtures necessarily involve good plumbing work, we could easily make our houses safe so far as drainage is concerned; but a leaky joint or a tilted trap makes the best appliance worthless. The impulse to improvements in this direction has come mainly from England, where most of the principles of good work of this kind have been developed; but we have devised some details better adapted to our climate and modes of construction, and while many of the patent traps and sewer-gas excluders are only useful in the patent law sense, and some not even in that, it is nevertheless true that the safety, accessibility and good appearance of plumber's work has been largely increased during the last few years by patented inventions. Much the same may be said with regard to heating appliances, including ventilating stoves and fireplaces, radiators, etc., but I am unable to express any enthusiasm with regard to what are commonly called patent ventilators.

No doubt the greatest progress in medical science during the next few years will be in the direction of prevention, and to

this end mechanical and chemical invention and discovery must go hand in hand with increase in biological and medical knowledge. Neither can afford to neglect or despise the other, and both are working for the common good. If the American patent system has not given rise to any specially valuable inventions in practical medicine or in theology, it must be due to the nature of the subjects, and not to any fault of the system.